PATENT
0649-0691P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant:	Shigeo SHINGU et al.	Conf.: Unknown	
Appl. No.:	New	Group:	Unknown
Filed:	May 25, 2001	Examiner:	Unassigned
For:	ROOF RAIL AND METHOD FOR PRODUCING THE ROOF RAIL		

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, DC 20231

May 25, 2001

Sir:

The following preliminary amendments and remarks are respectfully submitted in connection with the above-identified application.

In the Specification:

Please replace the first full paragraph on page 1, lines 4-6 with the following rewritten paragraph:

--Vehicle roof rails are mounted onto a roof of a vehicle for the purpose of putting a load on the roof rails.--

Please replace the last full paragraph on page 2, lines 17-25 with the following rewritten paragraph:

--In each of these proposals, there is proposed an integrally-molded vehicle roof rail of a thermoplastic resin reinforced with high-density glass fiber. There is, however, no description

of the problem that both external appearance and external surface characteristic of the resulting roof rail might be spoiled remarkably because of appearing in relief of glass fiber, or the like, in the surface. Hence, it is impossible to find any description and any disclosure of an improvement against the problem.--

Please replace the paragraph bridging pages 5-6 (page 5, lines 23-24, page 6, lines 1-6) with the following rewritten paragraph:

--To achieve the foregoing object of the present invention, the inventors have observed, in detail, phenomena, such as glass fibers or inorganic fillers appearing in relief in the surface of a molded product, etc., occurring in molding. As a result, it has been found that the behavior of molten resin observed in a portion of the molded product near a resin gate is delicately different from that in a portion of the molded product far from the resin gate.--

Please replace the first full paragraph on page 6, lines 7-16 with the following rewritten paragraph:

That is, in the portion near the resin gate, earlier injected molten resin flows while protruding from the resin gate into a mold cavity so as to be shaped like a cord. The earlier injected molten resin is pressed against the wall surface of the mold cavity by molten resin injected later in a stage in which the earlier injected molten resin is more or less cooled. This phenomenon is generally called jetting. The inventors have found that the marks of the thus

pressed resin are left in the surface of the molded product to thereby spoil the external appearance of the surface of the molded product.--

Please replace the second full paragraph on page 7, lines 9-22 with the following rewritten paragraph:

--In the long-sized molded product applied to the roof rail, there was further observed a phenomenon which was different from the jetting phenomenon and in which force of pressing molten resin against the cavity surface became insufficient in an end portion of the molded product located far from the resin gate because the end portion was filled with considerably cooled molten resin so that sufficient filling pressure was not transmitted to the end portion. This phenomenon was observed particularly remarkable in the molded product obtained by hollow injection molding. As a result of conduction of various examinations, the inventors found the presence of a mold structure which could allow sufficient pressure to be transmitted to a portion of the molded product far from the resin gate.--

Please replace the second full paragraph on page 8, lines 9-20 with the following rewritten paragraph:

--This is, the present invention provides a vehicle roof rail made of a resin composition containing glass fiber, and a polyamide resin having a crystallization temperature of not higher than 210°C and a glass transition temperature of not higher than

70°C, the roof rail having leg portions to be mounted onto a roof, and a rail portion integrally molded with the leg portions, characterized in that the difference in sixty degrees surface gloss between the surface of the rail portion and the surface of the leg portions is not larger than 5%, and in that the difference in surface roughness between the surface of the rail portion and the surface of the leg portions is not larger than 0.5 μm.--

Please replace the paragraph bridging pages 8-9 (page 8, lines 21-25, page 9, lines 1-3) with the following rewritten paragraph:

--Further, the present invention provides a method for producing a vehicle roof rail, characterized in that by using a mold having a resin gate, an ejection gate connected to an ejection cavity, and a fixed or movable dam provided in a mold cavity near the resin gate, the mold cavity is filled with a molten polyamide resin composition containing a polyamide resin and glass fiber to mold a rail portion integrally with leg portions to be mounted onto a roof.--

Please replace the first and only full paragraph on page 13, lines 8-25 with the following rewritten paragraph:

--If the crystallization temperature of the polyamide resin constituting the roof rail exceeds 210°C, molten resin injected/loaded in the mold cavity is cooled rapidly. As a result, the jetting marks of the injected/loaded molten resin are left slightly in a place near the resin gate. Furthermore, transferring characteristic is worsened in a place far from the resin gate. As

a result, both the difference in surface gloss and the difference in surface roughness between the surface of the rail portion and the surface of the leg portion become large in the resulting roof rail. Accordingly, the external appearance of the rail portion and the external appearance of the leg portion are undesirably hardly harmonized with each other. If the glass transition temperature is higher than 70°C, resisting force increases when molten resin is pressed against the cavity wall surface by injection filler pressure. As a result, transferring characteristic is worsened, so that both the difference in surface gloss and the difference in surface roughness become undesirably large.--

Please replace the paragraph bridging pages 14-15 (page 14, lines 21-25, page 15, lines 1-5) with the following rewritten paragraph:

--If the hollow ratio is lower than 15%, the roof rail becomes heavy. As a result, there is a risk that the roof rail may become undesirable economically in terms of energy savings and improvement of fuel cost. Furthermore, the volume of the hollow portion in the roof rail is so insufficient that force for pressing molten resin against the wall surface of the mold cavity by the pressure of a pressurized gas at the time of molding is in short supply. As a result, transferring characteristic deteriorates. There is a risk of worsening the external surface appearance.--

Please replace the paragraph bridging pages 33-34 (page 33, lines 14-25 through page 34, lines 1-16) with the following rewritten paragraph:

--Polyamide composed of two units, namely, hexamethylene adipamide unit (Ny66) and hexamethylene phthalamide unit (Ny61), in which the weight ratio of Ny66 to Ny61 was 85/15 and ηr was 2.40, was used as the polyamide resin. Fifty parts by weight of glass fiber were mixed with 50 parts by weight of the polyamide resin so that a polyamide resin composition were prepared. In this example, a roof rail molding mold apparatus having a planished cavity surface and having a whole length of 1600 mm as shown in Fig. 8 was used. A solid roof rail was molded in the condition that the opening/closing valve on the ejection gate was closed. An injection molding apparatus having a clamping force of 900 tons was used for molding under the molding conditions of cylinder temperature of 285°C, mold temperature of 90°C, injection filling time of 4.5 sec, resin dwelling of 40% and cooling time of 90 sec. The molded roof rail was evaluated by eye observation. As a result, no jetting mark was observed both in the surface of the rail portion and in the surface of the leg portion, so that the roof rail having a sense of high quality as a whole was obtained. The surface gloss and surface roughness of the surface of the roof rail molded product were measured in positions taken at regular intervals of about 145 mm on the whole length of the roof rail molded product. As a result, the averaged surface gloss and averaged surface roughness Ra on the whole of the roof rail were 55% and 0.6 μm respectively. The difference in surface gloss between the rail portion and the leg portion was

2%. The difference in surface roughness Ra between the rail portion and the leg portion was 0.2 μm.--

REMARKS

Claims 1-12 are pending in this application.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By _____ #42,866
for Raymond C. Stewart, #21,066

RCS/REG/jeb
0649-0691P

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please replace the first full paragraph on page 1, lines 4-6 with the following rewritten paragraph:

--[The present invention relates to vehicle roof rails to be] Vehicle roof rails are mounted onto a roof of a vehicle for the purpose of putting a load on the roof rails.--

Please replace the last full paragraph on page 2, lines 17-25 with the following rewritten paragraph:

--In each of these proposals, there is proposed an integrally-molded vehicle roof rail of a thermoplastic resin reinforced with high-density glass fiber. There is, however, no description of the problem that both external appearance and external surface characteristic of the resulting roof rail might be spoiled remarkably because of appearing in relief of glass fiber, or the like, in the surface. Hence, it is impossible to find any description and any disclosure [concerning] of an improvement against the problem.--

Please replace the paragraph bridging pages 5-6 (page 5, lines 23-24, page 6, lines 1-6) with the following rewritten paragraph:

--To achieve the foregoing object of the present invention, the inventors have observed, in detail, phenomena, such as glass [fiber's or inorganic filler's] fibers or inorganic fillers

appearing in relief in the surface of a molded product, etc., occurring in molding. As a result, it has been found that the behavior of molten resin observed in a portion of the molded product near a resin gate is delicately different from that in a portion of the molded product far from the resin gate.--

Please replace the first full paragraph on page 6, lines 7-16 with the following rewritten paragraph:

That is, in the portion near the resin gate, earlier injected molten resin flows while protruding from the resin gate into a mold cavity so as to be shaped like a cord. The earlier injected molten resin is pressed against the wall surface of the mold cavity by molten resin injected later in a stage in which the earlier injected molten resin is [cooled more or less] more or less cooled. This phenomenon is generally called jetting. The inventors have found that the marks of the thus pressed resin are left in the surface of the molded product to thereby spoil the external appearance of the surface of the molded product.--

Please replace the second full paragraph on page 7, lines 9-22 with the following rewritten paragraph:

--In the long-sized molded product applied to the roof rail, there was further observed a phenomenon which was different from the jetting phenomenon and in which force of pressing molten resin against the cavity surface became insufficient in an end portion of the

molded product located far from the resin gate because the end portion was filled with considerably cooled molten resin so that sufficient filling pressure was not transmitted to the end portion. This phenomenon was observed [remarkably] particularly remarkable in the molded product obtained by hollow injection molding. As a result of conduction of various examinations, the inventors found the presence of a mold structure which could allow sufficient pressure to be transmitted to a portion of the molded product far from the resin gate.--

Please replace the second full paragraph on page 8, lines 9-20 with the following rewritten paragraph:

--This is, [according to the present invention, provided is] the present invention provides a vehicle roof rail made of a resin composition containing glass fiber, and a polyamide resin having a crystallization temperature of not higher than 210°C and a glass transition temperature of not higher than 70°C, the roof rail having leg portions to be mounted onto a roof, and a rail portion integrally molded with the leg portions, characterized in that the difference in sixty degrees surface gloss between the surface of the rail portion and the surface of the leg portions is not larger than 5%, and in that the difference in surface roughness between the surface of the rail portion and the surface of the leg portions is not larger than 0.5 μm.--

Please replace the paragraph bridging pages 8-9 (page 8, lines 21-25, page 9, lines 1-3) with the following rewritten paragraph:

--Further, [according to the present invention, provided is] the present invention provides a method for producing a vehicle roof rail, characterized in that by using a mold having a resin gate, an ejection gate connected to an ejection cavity, and a fixed or movable dam provided in a mold cavity near the resin gate, the mold cavity is filled with a molten polyamide resin composition containing a polyamide resin and glass fiber to mold a rail portion integrally with leg portions to be mounted onto a roof.--

Please replace the first and only full paragraph on page 13, lines 8-25 with the following rewritten paragraph:

--If the crystallization temperature of the polyamide resin constituting the roof rail exceeds 210°C, molten resin injected/loaded in the mold cavity is cooled rapidly. As a result, the jetting marks of the injected/loaded molten resin are left slightly in a place near the resin gate. Furthermore, transferring characteristic is worsened in a place far from the resin gate. As a result, both the difference in surface gloss and the difference in surface roughness between the surface of the rail portion and the surface of the leg portion become large in the resulting roof rail. Accordingly, the external appearance of the rail portion and the external appearance of the leg portion are undesirably hardly harmonized with each other [undesirably]. If the glass transition temperature is higher than 70°C, resisting force increases when molten resin is

pressed against the cavity wall surface by injection filler pressure. As a result, transferring characteristic is worsened, so that both the difference in surface gloss and the difference in surface roughness become [large undesirably] undesirably large.--

Please replace the paragraph bridging pages 14-15 (page 14, lines 21-25, page 15, lines 1-5) with the following rewritten paragraph:

--If the hollow ratio is lower than 15%, the roof rail becomes heavy. As a result, there is a risk that the roof rail may become undesirable economically in terms of energy [saving] savings and improvement of fuel cost. Furthermore, the volume of the hollow portion in the roof rail is so insufficient that force for pressing molten resin against the wall surface of the mold cavity by the pressure of a pressurized gas at the time of molding is in short supply. As a result, transferring characteristic deteriorates. There is a risk of worsening the external surface appearance.--

Please replace the paragraph bridging pages 33-34 (page 33, lines 14-25 through page 34, lines 1-16) with the following rewritten paragraph:

--Polyamide composed of two units, namely, hexamethylene adipamide unit (Ny66) and hexamethylene phthalamide unit (Ny61), in which the weight ratio of Ny66 to Ny61 was 85/15 and ηr was 2.40, was used as the polyamide resin. Fifty parts by weight of glass fiber were mixed with 50 parts by weight of the polyamide resin so that a polyamide resin composition

were prepared. In this example, a roof rail molding mold apparatus having a planished cavity surface and having a whole length of 1600 mm as shown in Fig. 8 was used. A solid roof rail was molded in the condition that the opening/closing valve on the ejection gate was closed. An injection molding apparatus having a clamping force of 900 [ton] tons was used for molding under the molding conditions of cylinder temperature of 285°C, mold temperature of 90°C, injection filling time of 4.5 sec, resin dwelling of 40% and cooling time of 90 sec. The molded roof rail was evaluated by eye observation. As a result, no jetting mark was observed both in the surface of the rail portion and in the surface of the leg portion, so that the roof rail having a sense of high quality as a whole was obtained. The surface gloss and surface roughness of the surface of the roof rail molded product were measured in positions taken at regular intervals of about 145 mm on the whole length of the roof rail molded product. As a result, the averaged surface gloss and averaged surface roughness Ra on the whole of the roof rail were 55% and 0.6 μm respectively. The difference in surface gloss between the rail portion and the leg portion was 2%. The difference in surface roughness Ra between the rail portion and the leg portion was 0.2 μm.--